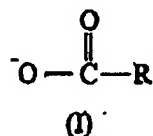


In the Claims:

Please amend claims 1 through 15 as follows.

1. A process for the oxidation of unsaturated hydrocarbons, wherein an unsaturated hydrocarbon, an oxygen-containing oxidizing agent, a palladium complex as the catalyst containing a ligand of the formula (I)



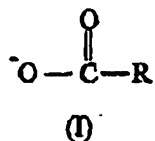
wherein R is a saturated, halogenated alkyl radical having from about 1 to 20 [[C]] carbon atoms, wherein the palladium complex contains, in addition to the ligand of the formula (I), an organic ligand (X \cap Y) which contains at least two atoms X and Y of main group III, V or VI of the periodic table, wherein this ligand can be coordinated to palladium via at least one of these two atoms X and Y and wherein at least one of these atoms is a constituent of a heterocyclic, aromatic ring system, and optionally auxiliary substances are brought into contact with one another

in a liquid phase based on

- (α 1) from about 10 to about 100 wt.% of a protic polar solvent and
- (α 2) from 0 to about 90 wt.% of an aprotic polar solvent, the sum of components (α 1) and (α 2) being about 100 wt.%,

at a temperature in a range from about 30 to about 300°C under a pressure in a range from about 1 to about 200 bar, such that a liquid phase containing oxygen-containing hydrocarbons is obtained.

2. A process for the oxidation of unsaturated hydrocarbons, wherein an unsaturated hydrocarbon, an oxygen-containing oxidizing agent, a palladium complex as the catalyst containing a ligand of the formula (I)



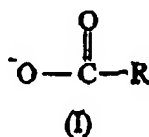
wherein R is a saturated, halogenated alkyl radical having from about 1 to about 20 [[C]] carbon atoms, and optionally auxiliary substances are brought into contact with one another

in a liquid phase based on

- (α1) from about 40 to about 90 wt.% of a protic polar solvent and
 (α2) from about 10 to about 60 wt.% of an aprotic polar solvent selected from the group consisting of polyethylene glycol dialkyl ethers, polyethylene glycol di-vinyl ethers and polyethylene glycol vinyl alkyl ethers, the sum of components (α1) and (α2) being about 100 wt.%,

at a temperature in a range from about 30 to about 300°C under a pressure in a range from about 1 to about 200 bar, such that a liquid phase containing oxygen-containing hydrocarbons is obtained.

3. A process for the oxidation of unsaturated hydrocarbons, wherein an unsaturated hydrocarbon, an oxygen-containing oxidizing agent, a palladium complex as the catalyst containing a ligand of the formula (I)



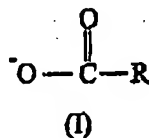
wherein R is a saturated, halogenated alkyl radical having from about 1 to about 20 [[C]] carbon atoms, and optionally auxiliary substances are brought into contact with one another

in a liquid phase based on

- (α1) a protic polar solvent and
- (α2) an aprotic polar solvent, the weight ratio of the protic to the aprotic solvent being in a range from about 100,000 : 1 to about 1 : 10,

at a temperature in a range from about 30 to about 300°C under a pressure in a range from about 1 to about 200 bar, such that a liquid phase containing oxygen-containing hydrocarbons is obtained, the protic polar solvent not being water and the aprotic polar solvent not being diglyme.

4. A process for the oxidation of unsaturated hydrocarbons, wherein an unsaturated hydrocarbon, an oxygen-containing oxidizing agent, a palladium complex as the catalyst containing a ligand of the formula (I)



wherein R is a saturated, halogenated alkyl radical having from about 1 to about 20 [[C]] carbon atoms, and optionally auxiliary substances are brought into contact with one another

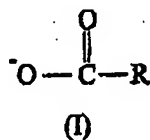
in a liquid phase based on

- (α1) water and
- (α2) diglyme, the weight ratio of the water to the diglyme being in a range from about 100,000 : 1 to about 1 : 10,

at a temperature in a range from about 30 to about 300°C under a pressure in a range from about 1 to about 200 bar, such that a liquid phase containing oxygen-containing hydrocarbons is obtained.

5. ~~Process~~ The process according to ~~one of the preceding claims~~ claim 1, wherein the radical R is a trifluoromethyl radical.
6. ~~Process~~ The process according to ~~one of the preceding claims~~ claim 1, wherein the oxygen-containing oxidizing agent is chosen from the group consisting of O₂, H₂O₂ and N₂O.
7. ~~Process~~ The process according to ~~one of the preceding claims~~ claim 1, wherein the liquid phase is a mixture of water and diglyme.
8. ~~Process~~ The process according to ~~one of the preceding claims~~ claim 1, wherein the unsaturated hydrocarbon is propylene.
9. ~~Process~~ The process according to ~~one of the preceding claims~~ claim 1, wherein the palladium complex is first activated by reduction before it catalyses the oxidation of the unsaturated hydrocarbon.
10. ~~Process~~ The process according to ~~one of claims 2-9~~ claim 2, wherein the palladium complex contains, in addition to the ligand of the formula (I), an organic ligand (X \cap Y) which contains at least two atoms X and Y of main group III, V or VI of the periodic table, wherein this ligand can be coordinated to palladium via at least one of these two atoms X and Y and wherein at least one of these atoms is a constituent of a heterocyclic, aromatic ring system.

11. ~~Process~~ The process according to claim ~~1- or 10~~ 1, wherein the organic ligand (X \cap Y) can be coordinated to palladium as a bidentate ligand via the two atoms X and Y.
 12. ~~Process~~ The process according to claim ~~1- or 11~~ 1, wherein the organic ligand (X \cap Y) is selected from the group consisting of p-bathophen-sulfonate or and 2,2'-bipyridyl.
 13. ~~Process~~ The process according to ~~one of claims 1 to 12~~ claim 1, wherein acetic acid or a salt of acetic acid is employed as the auxiliary substance.
 14. ~~Use of~~ The process according to claim 13, wherein the acetic acid or of a salt of acetic acid is employed as an ~~the~~ auxiliary substance ~~in a process according to one of claims 1 to 13~~
- (81) to increase the catalytic useful value of the palladium complex in the oxidation of unsaturated hydrocarbons, or
 - (82) to increase the selectivity of the oxidation of unsaturated hydrocarbons.
15. A process for the preparation of water-soluble or water-absorbent polymers, wherein, in a liquid phase obtained by a process for the oxidation of propylene, wherein propylene, an oxygen-containing oxidizing agent, a palladium complex as the catalyst containing a ligand of the formula (I)



wherein R is a saturated, halogenated alkyl radical having 1 to 20 [[C]] carbon atoms,

and optionally auxiliaries are brought into contact with one another in a liquid phase based on

- (α1) from about 10 to about 100 wt.% of a protic polar solvent and
- (α2) from 0 to about 90 wt.% of an aprotic polar solvent, the sum of components (α1) and (α2) being about 100 wt.%,

at a temperature in a range from about 30 to about 300°C under a pressure in a range from about 1 to about 200 bar, ~~or by a process according to one of claims 1 to 8,~~ the acrylic acid contained as the oxygen-containing hydrocarbon is polymerized and the water-soluble or water-absorbent polymer obtained in this way is then optionally dried and comminuted.